

Book of the Month

Priceless

‘Astrologers have been placed on earth to give economists credibility’ [Anon]

Mikhail Gorbachev, in announcing his policies of glasnost and perestroika, confirmed to the world that the USSR was in a mess. It was unable to keep up with the rapid pace of technical development in the west. An environmental catastrophe was unfolding, manifest most visibly in the explosion at Chernobyl. There were widespread signs of social breakdown.

How had a country that had once achieved so much got into this state? A major factor was the dogged pursuit of an ideology that flew in the face of common sense and empirical evidence.¹ This ideology permeated all aspects of society including science. Soviet science rested heavily on beliefs that had only the most tenuous association with empirical evidence. Assertions were made according to a tortuous logic that defied comprehension. Anyone who dared question this orthodoxy was ignored or worse. In biological matters, Lysenko ruled. The few areas of success, such as weapons programmes, often drew extensively on ideas copied from the west.

Today the former countries of the USSR are progressively disposing of the Soviet model of science, though it remains influential in some quarters. Unfortunately, in the USA, the only remaining superpower, we are seeing ideological distortion of science in a new form. The degree to which the scientific agenda is coming under the influence of neoconservatism has been deplored by the American Union for Concerned Scientists² and the Congressional Committee on Government Reform.³ Essentially, this new ideology seeks to employ science in the interests of the religious right and large corporations. The methods vary but an important element is the use of economic assessment to challenge any legislation considered to act against these interest groups, a prominent target being regulations to protect the environment from the effects of polluting or hazardous industries. At the forefront of these efforts has been the Office of Management and Budget, a government body that has long had the right to review the work of federal regulatory agencies such as the Environmental Protection Agency but which, until the presidency of George W Bush, had rarely done so. Since 2000 this Office has taken on a new lease of life, using cost-benefit analysis to challenge proposed and existing regulations that are seen as damaging to the interests of business.

The methods used in economics are often perplexing to those from other disciplines, even if the results look simple (for example, policy A costs £x to save a life, policy B costs £2x to achieve the same result, therefore policy A must be the correct one to adopt). The contrast between the simplicity of the result and the complexity of the methods is such that most of us are prepared to accept unquestioningly what the ‘expert’ economists tell us. In their book *Priceless*,⁴ Ackerman and Heinzerling set out, in a remarkably clear way, just why we should not accept what we are told. Examining the stance of some Washington economists, who invariably find the costs of regulation huge and the benefits negligible, they show in example after example why many of the central tenets of contemporary economic evaluation are built on sand.

They begin by challenging the basis of cost-benefit evaluation, reminding us of the principle established by the Vilfredo Pareto (an economist who provided inspiration for Italian fascists in the 1930s). Pareto argued that society derived a net benefit where one person gained as long as everyone else was no worse off. Superficially, who could disagree? Yet what if society wants to do something that would improve the lot of the overwhelming majority of the population, such as remove lead from petrol, but would cause a loss to a few, in this instance the manufacturers of lead additives? Acceptance of this principle makes it almost impossible to change the status quo.

A second target is the public perception of the scale of government regulation—an issue that is especially relevant in the USA where a substantial proportion of the citizenry believe themselves entitled, in some circumstances, to take up arms against the Federal Government.⁵ Many of the frequently cited costs, they show us, are based on regulations that have never been proposed, let alone implemented. The mythology thus created provides fertile ground for policies promoting deregulation or, as expressed in the UK, a ‘bonfire of red tape’.

They then engage with a series of technical issues. One is the way in which a value is placed on human life. A widely adopted approach is to take a job where there is a degree of risk that can be quantified (in reality guesstimated) and combine this knowledge with information on the additional income earned by someone who agrees to do this job. A key assumption is that those who undertake hazardous jobs fully understand the risks and can make informed choices—a notion that lacks plausibility when we think about illegal Hispanic migrants exposed to pesticides on US farms. The authors show how the figure that emerges differs strikingly according to whether you are black or white or male or female. This provides strong justification, they note, for taking toxic waste from rich countries and dumping it in poor ones—as was once proposed by a chief economist at the World Bank. The Brazilian Secretary of

the Environment appropriately replied: 'Your reasoning is perfectly logical but totally insane'.

A related issue is how to value human suffering. In a study of the economic impact of removing arsenic from drinking water, researchers used a method known as 'willingness to pay' to quantify how much people valued *not* having bladder cancer. They were not deterred by the absence of data since they had information on what people in a shopping mall in North Carolina thought about bronchitis. Except that it was not that simple. Individuals were asked about how much lower the cost of living in a community with a high risk of bronchitis would have to be for them to be indifferent between living there or in one with a lower risk. Only two-thirds understood what was being asked of them and the investigators then rejected a further one-third of responses deemed to be 'inconsistent' or 'irrational'. The researchers ignored the fact that bladder cancer and bronchitis are different diseases. Still, as Lewis Carroll noted, if you have done six impossible things before breakfast⁶ what difference does another one make? The net effect is to show that the value placed on suffering is so low that it can be essentially ignored.

A further issue relates to how to deal with costs and benefits that occur in the future. We all like to enjoy a benefit today and postpone the costs until later, and this natural inclination has given rise to the practice of discounting, whereby future benefits are reduced in value while costs incurred now retain their full value. Thus, the value of a year of life lost at age 70 to a child who is now three would be 0.9 of a year, at the conventional 7% discount rate. With judicious use of this technique it is easy to show that a regulation that would save the lives of fifty 3-year-olds is really equivalent to a present value of only 35 children, each with a present value of life expectancy of only 14 years.

Priceless is replete with other problematic issues, including how to value the environment or wildlife (how much is it worth to us that whales are not driven to extinction?) and the quantification of risks that cannot be known (a point illustrated by the low estimates of potential deaths made by some economists in their quest to reduce the cost of airport security before 11 September 2001). The logic of cost-benefit analysis is applied selectively and is seldom applied critically to policies that favour corporations. So is there an alternative? Ackerman and Heinzerling do offer a different way forward. First, a holistic approach is preferable to an atomistic one in which each decision seems reasonable yet the conclusion is ludicrous. Second, we

should recognize moral imperatives; some things simply must be done. Third, they accept the precautionary principle: where the range of possible risks is large, assume the worst. And their fourth recommendation is to promote fairness—both between rich and poor and across generations. They show how, taken together, these strategies might make the world a better place.

The neo-conservative economists in Washington have constructed a paradigm that has about as much rational basis as alchemy or astrology. The tragedy is that they now have a direct line to politicians who, if not acting as fronts for the large corporations onto whose boards they will migrate effortlessly upon leaving office, are so gullible that they believe this nonsense.⁷ And this collective madness is not confined to Washington; many examples can currently be found in the vicinity of Downing Street.

Although many of the examples cited in *Priceless* relate to the environment, most are equally applicable to the health sector. The book thus represents a strong argument for health professionals to get trained in economics, so that they can understand and challenge erroneous assumptions. Soviet scientific ideology contributed substantially to the catastrophes that afflicted health and the environment in the USSR in the 1980s. If the economic ideology in Washington continues on its present course, the USA is unlikely to escape a similar fate.⁸

Martin McKee

London School of Hygiene and Tropical Medicine, London WC1E 7HT, UK
E-mail: martin.mckee@lshtm.ac.uk

REFERENCES

- 1 Krenentsov N. *Stalinist Science*. Princeton, NJ: Princeton University Press, 1997
- 2 Union of Concerned Scientists. *Scientific Integrity in Policy Making: an Investigation into the Bush Administration's Abuse of Science*. Cambridge, MA: UCS, 2004
- 3 United States House of Representatives, Committee on Government Reform—Minority Staff Special Investigations Division. *Politics and Science in the Bush Administration*. Report prepared for Rep Henry A. Waxman, August 2003
- 4 Ackerman F, Heinzerling L. *Priceless: On Knowing the Price of Everything and the Value of Nothing*. New York: New Press, 2004 [277 pp; £17.95; ISBN 1-56584-850-0 (h/b)]
- 5 Esler G. *The United States of Anger: People and the American Dream*. Harmondsworth: Penguin, 1998
- 6 Carroll L. *Through the Looking Glass*. Harmondsworth: Penguin, 1994
- 7 Wheen F. *How Mumbo-jumbo Conquered the World*. London: Fourth Estate, 2004
- 8 McKee M, Coker R. The dangerous rise of American exceptionalism. *Lancet* 2003;**361**:1579–80

Multiple Sclerosis: The History of a Disease

T Jock Murray

580pp Price \$29.95 ISBN 1-888799-80-3 (p/b)

New York: Demos Medical Publishing

'It would be nice if a physician from London, one of these days, were to gallop up hotspur, tether his horse to the gatepost and dash in waving a reprieve—the discovery of a cure!' Wilhelm Nero Pilate Barbellion, the pen name of Bruce Frederick Cummings, described his life with a chronic neurological illness in his *Journal of a Disappointed Man*. He died age 30 years, in 1919. Early features were recurrent numbness and weakness in the limbs, vertigo, depression, decreased sight in one eye, facial numbness and weakness in the right arm. Medications included arsenic and strychnine and homeopathic remedies. Sir Henry Head, the neurologist, asked suspiciously if he had ever been with women, and then ordered two months' complete rest in the country. He 'chased me around his consulting room with a drumstick tapping my tendons and cunningly working my reflexes'. The diagnosis was concealed from Cummings, who sought a military service examination to force a disqualification diagnosis of disseminated sclerosis.

T Jock Murray is Professor of Medical Humanities and Director of the MS Program at Dalhousie University, Halifax, Canada. *Multiple Sclerosis: The History of a Disease* shows depth and breadth of understanding and a passion for the subject; moreover, the style of presentation makes it an easy and addictive read, enhanced by well annotated illustrations. In describing the history of multiple sclerosis Murray also provides a history of neurology and the associated philosophy of science. Possibly the earliest documentation of multiple sclerosis is the case of Lidwina the Virgin, who lived in Schiedam, Holland. In 1395, age 16 years, Lidwina developed an acute illness and subsequently fell while skating on a frozen canal. Later symptoms included blindness in one eye, weakness and pain. She died in 1433. After canonization she became the patron saint of both figure skating and sickness. While some commentators have considered there to be sufficient evidence for a diagnosis of multiple sclerosis, Murray in his gentle way points to elements of marked religiosity, mysticism, histrionic behaviour, and even self-mutilation.

The features of multiple sclerosis were first well defined by Jean-Martin Charcot, neurologist at the Hôpital de Salpêtrière in 1868, as 'la sclérose en plaques'. In particular he made the distinction between the tremor of paralysis agitans (later called Parkinson's disease) and that of multiple sclerosis. The three most reliable indicators of multiple sclerosis—intention tremor, nystagmus, and scanning speech—became known as Charcot's triad.

Dr Murray educates the reader painlessly on the aetiology and pathogenesis of multiple sclerosis while presenting the history of the disease. Thus we proceed through clinical description and classification, neuropathology, neurophysiology, immunology, and imaging, with a hint of genetics. The continuing critical theme is neuropathology. From the clinician's point of view the development of magnetic resonance imaging has been key to allowing more precise diagnosis as well as surrogate markers for clinical trials. Until very recently there has been no effective treatment, although a wide range of treatments have been used. It is surprising to see that the current use of steroids for acute relapses is quite recent (high-dose intravenous methylprednisolone replacing corticotropin in the early 1980s, following the pattern of usage by rheumatologists), with the first major controlled trial to demonstrate efficacy of the regimen published in 1987. Interferons, discovered in the 1950s, were initially promoted as a treatment for cancer. In 1977 Lawrence Jacobs of Buffalo, NY, was offered a returned supply of interferon (produced from the foreskin of recently circumcized infants). He was initially interested in using this for the rapidly progressive and fatal illness amyotrophic lateral sclerosis (motor neuron disease) but chose to study multiple sclerosis since there were more patients available. The Food and Drug Administration approved the first interferon for treatment of multiple sclerosis in 1993, with other interferons and copolymer following. The use of the interferons remains controversial, with the National Institute for Clinical Excellence in the UK being equivocal in its advice.

Altogether this is a fascinating and monumental work, a pleasure to read. The contents should be accessible to a wide audience, and provide an excellent understanding of multiple sclerosis, the history of neurology, and the philosophy of science. In his final words Dr Murray offers a conclusion that may be a cliché but reflects the content of the work: 'For every breakthrough identified with an individual, there are her or his many colleagues, coworkers, staff and assistants—the person who developed the technological step that allowed the research to go forward, the statistician who showed that the work was relevant, the secretarial and administrative staff who kept the absent-minded professors free to pursue their scientific goals, and especially their colleagues, who provided a support system and added ideas and information that allowed them to go forward.' This is the nature and lesson of history.

Richard W Orrell

Department of Clinical Neurosciences,
Royal Free and University College Medical School,
University College London, London NW3 2PF, UK

Arterial Aneurysms: a Historical Review

Raphael M E Suy

195pp Price €50 ISBN 90-901-8493-7 (h/b)

Belgium: Fonteyn, Science et Médecine

The story of aneurysms goes back a long way. There are traces of them (albeit rather uncertain) to be found in Egyptian tombs, and the ancient Greeks and Romans certainly recognized the lethal nature of a swelling that pulsed in time with the heart and how important it was to distinguish such bumps from abscesses which could be cured by simple incision. In ancient times aneurysms usually resulted from trauma, and would nowadays be called false aneurysms because they did not involve the entire arterial wall. Some were caused by war wounds but many followed clumsy venesection, when the brachial artery was punctured rather than the adjacent vein. From the fifteenth century onwards the picture changed because of the arrival from the New World of syphilis, which leads to weakening of the arterial wall. It took a long time for the connection between venereal disease and aneurysm to be admitted, largely because of the reluctance of clinicians to connect anatomical lesions, particularly in their more influential patients, with sexual behaviour.

From the very earliest days it was known that these lesions could not safely be left alone. Not only were they often very painful, but enlargement and eventual rupture always followed. Treatments included external compression through many ingenious devices, application of unguents and potions, and various eccentric diets. Surgery was kept as a last resort, because it was hardly ever successful. Ligation of the feeding vessels was the standard procedure, but all too often the aneurysm continued to enlarge through collateral channels, or else the arterial supply to a limb failed and gangrene followed. The different patterns of ligation suggested by, among others, John and William Hunter were well thought out but difficult to execute because a quick operation on a conscious patient made precision impossible. Even in the best hands mistakes were frequent, as when Robert Knox gloatingly described to his Edinburgh students how his rival the eminent surgeon Robert Liston had that very morning 'plunged his knife into what he foolishly imagined to be an abscess, and with blood gushing forth from the aneurismal sac, the patient was dead within a few seconds'. For many surgeons, primary amputation, as advised by Percival Pott, seemed the safest option.

With the arrival of general anaesthesia, surgeons could work in a deliberate and careful manner, observing and following the anatomy. Various attempts at reconstructive surgery culminated in the 1920s in the work of Rudolfo Matas, whose 'endoaneurysmorrhaphy', which involved

sewing the aneurysmal sac from within, remained the standard procedure for many years. During the twentieth century, syphilis declined as the main pathology, to be replaced by degenerative arterial disease including atherosclerosis. Dramatic improvements in imaging techniques, from arteriography to CT and MRI, enabled the surgeon to plan the approach, and at the same time, metabolic care of the surgical patient made complex and prolonged interventions safer. The commonest and most lethal form of aneurysm was now that of the abdominal aorta. Reconstruction of this lesion, and of complex aneurysms involving the chest, became a safe routine procedure, and the results of emergency surgery for ruptured aneurysm steadily improved. Nonetheless, open repair remained a formidable operation for these patients who were usually elderly and had extensive comorbidity, and an alternative procedure was needed. Parodi's introduction in the late 1990s of endovascular repair (EVAR), by which a prosthesis is guided into the aorta via the femoral artery, producing a new narrow channel while the retained sac is allowed to collapse and thrombose around it, has transformed the management. Certainly EVAR is not the final answer, and problems and complications remain to be resolved, but Parodi's initiative points the way forward.

Raphael Suy, a distinguished vascular surgeon from the University of Leuven, has had a personal as well as a professional interest in the aneurysm story, and his beautifully produced and illustrated book relates it in elegant form. The scholarship is profound and this must remain the authoritative work of reference for the foreseeable future

Adrian Marston

London SW7, UK

Quartet of Unlikely Discoveries

Sylvia Tait, James Tait

224 pp Price £7.99 ISBN 1-84401-343-X

London: Athena Press

Sylvia and Jim Tait's *Quartet* is in part a scientific autobiography and in part a review of endocrine advances made during their working lives. It focuses on four research projects to which the two made important contributions before Sylvia Tait died in 2003.

The first topic is the structure of DNA. Here is given a detailed chronological account of the work of Rosalind Franklin, Wilkins, and Watson and others leading to the eventual elucidation of the structure of the molecule. Some of the early work on DNA had been done at Leeds University and here, using 'dilapidated apparatus', James

Tait did his PhD research project. We are not told exactly what this was although he describes it as being 'mostly very tedious and boring'. The Taits moved to the Middlesex Hospital Medical School in London. Presumably this wise choice was made because the dean was Sir Charles Dodds, an accomplished steroid chemist who had synthesized the first commercially available oestrogen, namely stilboestrol. Here Jim and Sylvia Tait isolated and characterized the hormone electrocortin, so-called because of its effect on electrolytes. The name of this salt-retaining corticosteroid was later changed to aldosterone because this gave a better indication of its chemical structure. This was a major breakthrough in steroid chemistry, but further study and understanding of aldosterone together with the development of drugs that impede its action have had less influence on the treatment of congestive cardiac failure than was at first thought probable.

In conjunction with Roger Ekins, the Taits developed immunoassay techniques for the measurement of thyroid hormones—a major contribution which laid the background for the modern treatment of thyroid diseases. Jim Tait, no doubt correctly but rather irritatingly, persists in calling this technique 'saturation analysis', although universally it is now known as an immunoassay after its perfection in the USA by Yalow and Berson.

In the late 1950s the Taits moved to the Worcester Foundation in America to work with Gregory Pincus who at that time was developing the contraceptive pill. However, the Taits continued to work mainly on the metabolism of aldosterone and on steroid dynamics. Later they returned to the Middlesex Hospital Medical School. There follows a rather lengthy and heated discussion of the awarding of Nobel prizes and whether this is always as fair as it should be. Similarly, election to the Royal Society is discussed and it is a relief when the Taits are made Fellows simultaneously.

This is an interesting book rather than an important one. Historians of endocrinology will wish to read it. Sadly one gets the impression that the Taits, despite being elected Fellows of the Royal Society, do not feel they were given the recognition or were dealt with as honourably as their work and contributions deserved. If only aldosterone had proved more significant in human physiology and had played

a more important role in human ill-health, the authors might have better grounds to complain.

R I S Bayliss

London SW7, UK

Female Urinary Incontinence in Practice

Matthew Parsons, Linda Cardozo

120 pp Price £17.95 ISBN 1-85315-581-0 (p/b)

London: RSM Press

From epidemiological studies we now have a clear picture of the scale of distress resulting from female incontinence. The condition is widespread, and costly to both affected persons and the community. Linda Cardozo (well-known for her work on the subject) and her colleague Matthew Parsons provide an excellent overview in a short space. After an introduction on embryology, anatomy, and physiology they proceed to assessment of the patient with a stepwise approach that gives special emphasis to urodynamics, including imaging of the urinary tract. We are then offered a classification of incontinence, and later chapters are given over to stress incontinence and detrusor overactivity (with useful accounts of therapeutic options). Other topics are voiding difficulty, urinary tract infection and sensory disorders of the lower urinary tract. All these overviews are well balanced, but I confess to slight disappointment with the item on sensory disorders. I would have welcomed more information on pelvic pain syndrome, which is very troublesome in clinical practice; Parsons and Cardozo concentrate on sensory bladder and urethral disorders and say little about management of associated conditions such as endometriosis. Also, when they deal with hormone replacement therapy, I would have appreciated more advice on which preparations to use, in the light of the new findings on adverse effects. They conclude with a review of pads, catheters and containments and a chapter on frequently asked questions. Among the appendices is a useful list of patient-led and professional organizations. The book is well laid out and easy to read.

C R Chapple

Department of Urological Surgery,
Royal Hallamshire Hospital,
Sheffield S10 2JF, UK